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(54) **Method and apparatus for
applying additive matter to
tobacco**

(57) A method and apparatus for applying an additive, such as flavourant, to tobacco during the cigarette making process is disclosed. The amount of additive lost during the cigarette making process is minimised by applying the matter to the tobacco in particulate form through a conduit (33) in the short tongue (30) as the tobacco and cigarette paper pass through the garniture and beneath the compression foot (32) of the tongue, one of the last steps prior to enclosing the tobacco rod in the paper at the folding unit.

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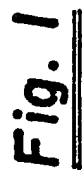


Fig. 1

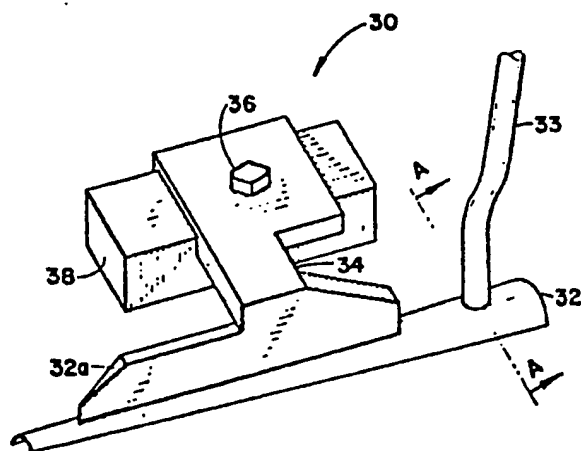


Fig. 2

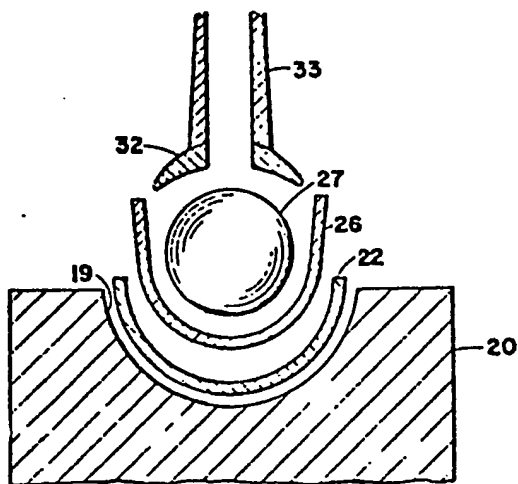


Fig. 3

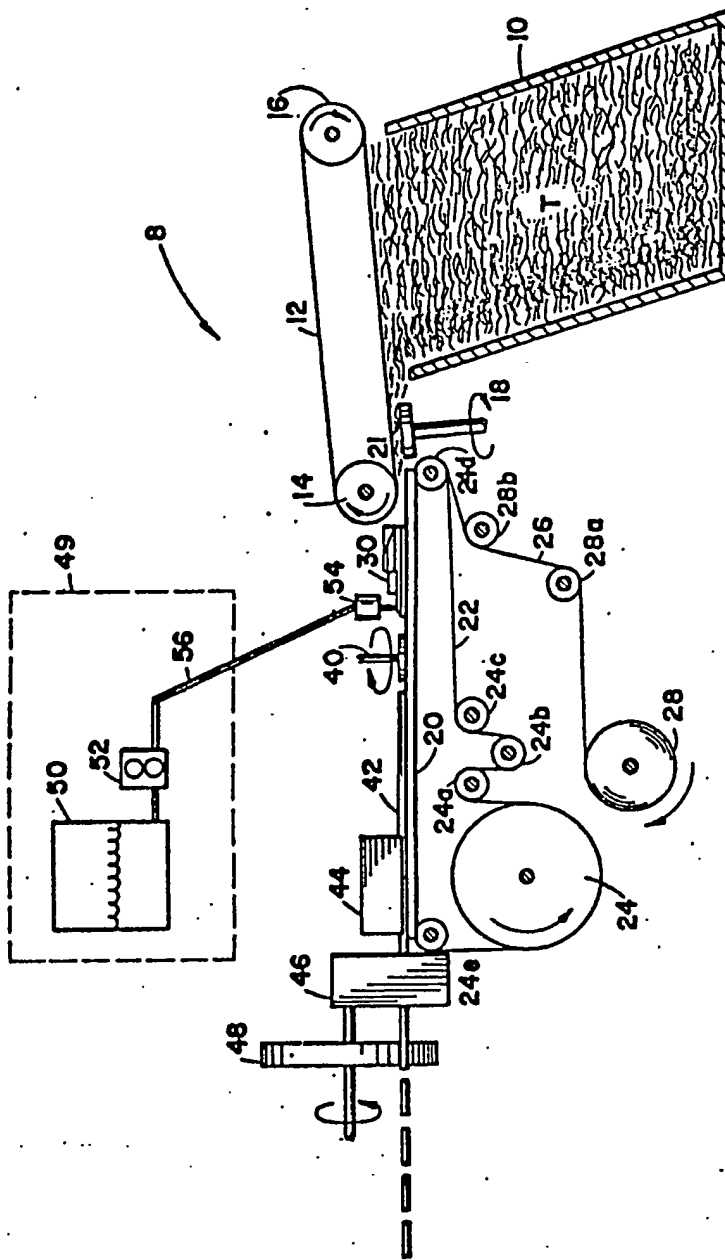


Fig. 4

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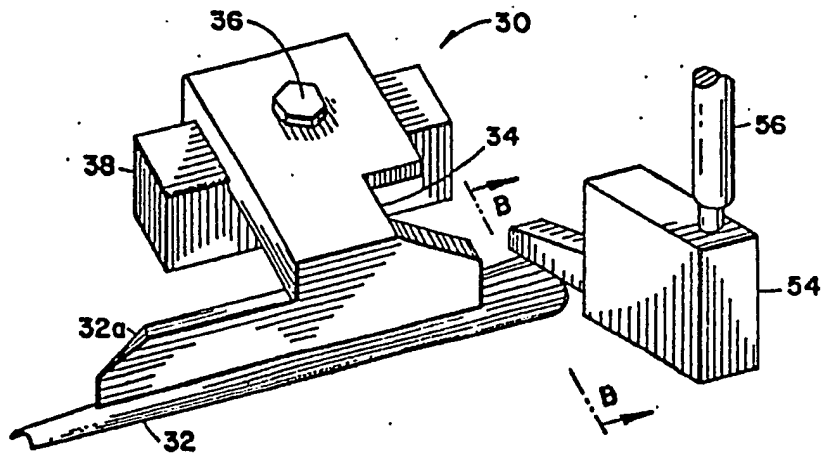


Fig. 5

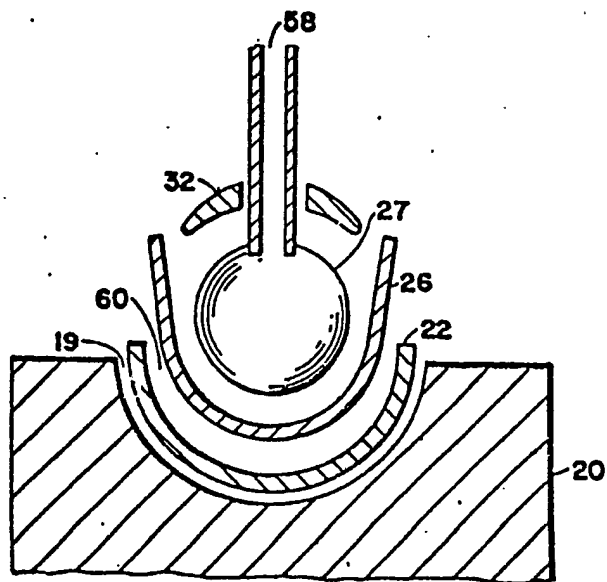


Fig. 6

SPECIFICATION

Method for applying additive matter to tobacco

5 This invention relates to cigarette making machinery and more particularly to method and apparatus for adding matter to tobacco during the cigarette making process.

Use of flavorants in tobacco is well known. There are, however, several drawbacks to the methods of applying flavorants to tobacco currently in use. For example, menthol is often applied to tobacco by spraying the tobacco with a dilute menthol solution. This method, however, does not produce a uniform product, since the spray is in the form of discrete droplets which do not contact all of the tobacco. Also, part of the menthol may be lost, using this method, in the course of processing the tobacco.

Another method of applying menthol to tobacco is disclosed by Key, U.S. Patent Number 3,548,838. This method exposes the tobacco to an alcohol-menthol vapor as the tobacco is blown through a conduit. A defect of this system is that alcohol is an extra expense. Also, there is a danger that the alcohol vapors might reach explosive concentrations.

Davis, U.S. Patent Number 3,136,321, discloses a method of adding dry, finely divided flavoring material to tobacco. This method involves moistening the tobacco to a water content of about 17 percent to 35 percent. The finely divided material is then blown onto the tobacco and the tobacco is dried to a water content of about 5 percent to 6 percent. This method results in some loss of flavorant as the tobacco is further processed and also leaves some flavor residue in the cigarette making machine. The cigarette making machine must then be cleaned of all residue prior to using the machine to manufacture unflavoured cigarettes or cigarettes with a different mixture of flavorants, which is time consuming and expensive.

According to the present invention, a conduit opening into the short tongue of a cigarette making machine is provided through which flavourant or other additive matter is added to the tobacco prior to enclosing the tobacco rod in cigarette paper.

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily apparent by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Figure 1 is a schematic illustration of one form of cigarette making machine according to the present invention;

55 Figure 2 is a perspective view of the short tongue of the cigarette making machine shown in Figure 1;

Figure 3 is a sectional view along the line A-A of the short tongue shown in Figure 2;

Figure 4 is a schematic illustration of a cigarette making machine according to another embodiment of the present invention;

Figure 5 is a perspective view of the short tongue of the cigarette making machine shown in Figure 4;

Figure 6 is a sectional view along the lines B-B of the short tongue shown in Figure 5.

Referring now to the drawings and more particularly to Figure 1, there is illustrated a cigarette making apparatus, known as the MK8 Cigarette Maker and commercially available from the Molins Company, designated generally by reference numeral 8. Cigarette maker 8 is shown schematically to include tobacco chimney 10 from which tobacco T is blown onto perforated vacuum belt 12, driven by rollers 14 and 16, to convey tobacco T, supported by belt 12, to trimmer knife assembly 18 supported for movement toward or away from the conveyed tobacco to vary the amount of tobacco on belt 12 in accordance with a cigarette weight or density based control signal.

Leftwardly of roller 14, such Molins apparatus includes elongated garniture 20 defining an open channel 19, shown in Figure 3, extending longitudinally and of generally semi-cylindrical configuration. Endless garniture tape or belt 22 is fed to upstream tobacco input mouth 21 of the garniture and transported through the garniture 20 by drive wheel 24 over idler rollers 24a-24e. Cigarette paper 26 is fed to mouth 21 atop garniture tape 22 from supply roll or bobbin 28 over idler rollers 28a, 28b, and 24d. Tobacco falls from belt 12 onto paper 26 as vacuum is removed from the belt. On entry of garniture tape 22 into the garniture channel 18, the garniture imparts generally semi-cylindrical shape thereto, like shape being thereby imparted to paper 26 and the tobacco T deposited thereon from the belt 12, the open semi-circular cross-section of the tape, paper and tobacco being shown in Figure 3.

Short tongue 30 of such Molins apparatus shown in Figures 1 and 2, comprising compression foot 32 and cantilever beam member or arm 34, is located downstream of garniture mouth 21. Compression foot 32 is cooperative with garniture 20 to impart generally cylindrical form to the tobacco to form a tobacco rod 27, shown in Figure 3. To this end, compression foot 32 defines an open channel extending longitudinally therein and also of generally semi-cylindrical configuration, the open semi-cylindrical configuration cross-section of such channel being shown in Figure 3. One end of beam 34 is fixedly secured, as by bolt 36 to base 38, Figure 2, and, the opposite end of beam 34 is integral, or otherwise in supporting relation, with stem 32a of compression foot 32. Particulate matter is added to the tobacco rod via conduit 33 as tobacco T is formed into a rod by garniture 20 and compression foot 32.

As the formed tobacco rod 27 leaves short tongue 30, a length of cigarette paper 26 extends tangentially from the paper-wrapped rod. Paster wheel 40, shown in Figure 1, applies an adhesive to such extending length of paper whereupon unit 42 folds such pasted length over and unit 44 heat seals the rod. The sealed continuous rod now passes through nuclear density gage 46 and is then cut by rod cutoff mechanism 48.

Referring now to Figure 3, there is shown a schematic, sectional view of the interaction of compression foot 32 and garniture 20 in forming tobacco rod 27. As tobacco rod 27 passes under compression foot 32, particulate matter, such as flavoring, is deposited on tobacco rod 27. The particulate matter is conveyed to tobacco rod 27 by means of a

pneumatic stream through conduit 33. The amount of flavoring that is lost is minimized because tobacco rod 27 is closely confined at this point in the manufacturing process.

5 This method of adding flavoring material to tobacco may be used whether the flavoring material is a particulate material, in the form of a solid, or a liquid. In the case of liquid flavorant, the liquids may be encapsulated. Such encapsulating means are well known. One such method is described by McGlumphy in the U.S. Patent Number 3,550,598. Encapsulating liquid flavourants, especially highly volatile ones, reduce the amount of flavourant lost due to vaporization.

15 For some compounds which are solid at ambient temperatures it may be desirable to heat the compound and apply it as a liquid. For example, it may be desirable to heat menthol above its melting point 41-43°C and apply the compound as a hot melt. Figure 5 shows a cigarette making machine 8 adapted to apply a hot melt compound to tobacco. A hot melt adhesive applicator 49 such as is available commercially from Mercer Corporation, 110 Taylor Industrial Boulevard, Hendersonville, Tennessee, Model 200, is used to apply the hot melt compound. Hot melt adhesive applicator 49 consists of a heated reservoir 50, for raising the compound to the proper temperature, a pump 52, and a heated pipe 56. Heated pipe 56 maintains the hot melt compound at the proper temperature while being pumped from reservoir 50 to nozzle assembly 54. This apparatus may also be used to a vaporized material to the tobacco.

Nozzle 58, shown in Figure 6, carries the hot melt compound from nozzle assembly 54 through compression foot 32 to tobacco rod 27. Because the short tongue 30 may act as a heat sink and cause the hot melt compound to crystallize in nozzle 58, an air gap is maintained between nozzle 58 and compression foot 32. Alternatively, insulating material could be used between compression foot 32 and nozzle 58. Figure 6 shows nozzle 58 penetrating tobacco rod 27. However, the tip of nozzle 58 may be flush with the lower surface of compression of foot 32 so as to apply the hot melt compound to the surface area of tobacco rod 27.

Adding flavoring to tobacco by the above method is thus seen to be more economical than methods currently in use since less of the material is lost during the cigarette making process. Also, production workers are not exposed to potentially irritating vapors. Also, less production time is lost when changing to a different flavoring additive since only the short tongue must be cleaned rather than the entire machine. Thus, by a relatively minor modification to an existing cigarette making machine, the cigarette making process is made more efficient and less expensive.

CLAIMS

1. A method of making a cigarette in which wrapper material and tobacco material are formed into a rod by passage between a garniture and a so-called short tongue, in which a flavourant or other additive is passed through a conduit in the short tongue and incorporated with the tobacco material in the rod.

2. A method according to claim 1, in which the additive is a particulate solid.

3. A method according to claim 1 in which the additive is a liquid in particulate form.

70 4. A method according to claim 3, in which the additive is an encapsulated liquid.

5. A method according to claim 1 in which the additive is encapsulated menthol.

75 6. A method according to claim 1 in which the additive is a compound which is raised above its melting point before incorporation with the tobacco material.

7. Cigarette making apparatus comprising a garniture and a short tongue which co-operate to form tobacco and wrapper material into a rod in which the short tongue is provided with a conduit through which flavourant or other additive can be added to the tobacco material.

80 8. Apparatus according to claim 7 in which the conduit terminates in an opening in the semi-cylindrical surface of a compression foot carried by the short tongue.

85 9. Apparatus according to claim 7 in which the conduit passes through and is thermally isolated from the compression foot.

10. A method of making a cigarette substantially as described with reference to Figs. 1 to 3 or with reference to Figures 4 to 6 of the drawings.

95 11. Cigarette making apparatus substantially as described with reference to Figures 1 to 3 or with reference to Figures 4 to 6 of the drawings.

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